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a digest of timely information

Editor - Captain F. W. Farrar. (MC). U.S.N.

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Preliminary Report on the Use of Anticoagulants in the Management of Acute Myocardial Infarction: There has been a considerable decline in the immediate mortality from acute coronary thrombosis with infarction as a result of improved methods of recognition and treatment. However, the disability and loss of life that have occurred from the associated complications make it evident that, could these complications in some way have been prevented, a satisfactory recovery and added years of productive life might have been experienced.

The complications which accompany acute coronary thrombosis with myocardial infarction frequently are the immediate effects of additional arterial thombosis, formation of mural thrombi and embolic phenomena. It would seem logical to assume that utilization of the now available anticoagulant drugs would aid materially in reduction of the frequency of occurence of these complications. The medical literature contains numerous reports based on both clinical and necropsy material which attest to the high incidence of thrombo-embolic complications after acute myocardial infarction. Results of these studies have been amply reviewed in the recent report of Nay and Barnes, and the cases which they presented from the Mayo Clinic will serve for comparison with these in which anticoagulant drugs were employed. The use of dicumarol and heparin in the management of acute coronary thrombosis with myocardial infarction is based on four principal objectives: (1) the prevention of an extension of the thrombus, either proximally or distally to the original site of the closure, (2) the prevention of the formation of intracardiac mural thrombi, (3) the prevention of thrombophlebitis from which pulmonary embolism may arise, and (4) the prevention of thrombosis in peripheral arteries already considerably affected by arteriosclerosis.

When dicumarol first became available and the method of its safe administration was made familiar, there was still a feeling of reluctance on the part of physicians to employ this preparation, as well as heparin, in cases of acute coronary thrombosis. This apprehension was based on the knowledge that closure of the coronary artery occasionally is precipitated by subintimal hemorrhage into an atheromatous plaque, and it was thought that anticoagulants might therefore play an adverse role in this type of case. The study of English and Willius, however, revealed that this phenomenon played a major role in occlusion of the coronary artery in but very few instances. Therefore, because the report of Nay and Barnes revealed that in 100 consecutive cases in which acute myocardial infarction was observed, thrombo-embolic complications occurred in 37 per cent of the patients during their convalescent period in the hospital, the utilization of dicumarol, or heparin and dicumarol in combination, was begun.

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The three reports concerning dicumarol in acute coronary thrombosis which have appeared in the medical literature in this country indicated its favorable effect in lowering the mortality rate and in the prevention of thrombo-embolic complications.

The purpose of this preliminary report is to present the authors' experience in the first fifty cases of acute myocardial infarction in which these preparations were used. The series reported by Nay and Barnes will serve herein as a control series, for the management of both groups of patients was in all respects the same except for the additional use of the anticoagulant preparations.

The patients represented in this report were persons who were hospitalized in one of the Rochester hospitals within a few days after the onset of clinically unmistakable acute myocardial infarction. In addition to the usual therapeutic program, these patients received dicumarol, or heparin in combination with dicumarol, as soon as the clinical diagnosis of acute myocardial infarction had been established. Positive electrocardiographic changes indicative of acute myocardial infarction were noted in all cases. No attempt was made to select only certain patients because of the severity or mildness of the systemic reaction to the infarction. Anticoagulants were omitted in the cases in which there was believed to be a definite contraindication to their use, such as renal insufficiency, hepatic disease, or the presence of a suspected ulcer or bleeding lesion. Two patients who had received dicumarol, but who died within a few hours after admission to the hospital before there was any lowering of the prothrombin level, are not included in this series.

Of the fifty patients in this study forty were men and ten were women. The average age of these patients was fifty-nine years; the youngest was thirty-nine and the oldest was eighty-two.

Twenty-nine of the fifty patients (58 per cent) gave a history of angina pectoris prior to the onset of the acute myocardial infarction for which they were hospitalized. In eleven cases (22 per cent) there had been a previous episode of acute myocardial infarction, but in no instance had there been more than one clinically recognizable myocardial infarction prior to the one for which the patients concerned in this series were treated. Twenty patients (40 per cent) either had hypertension at the time of their admission to the hospital or were known to have had hypertensive disease prior to the onset of the present myocardial infarction. Two patients had suffered from congestive heart failure prior to the development of acute myocardial infarction.

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The administration of dicumarol and heparin to this group of patients and proper control of dosage followed the method recommended by one of the authors (Barker) and his colleagues in the management of acute peripheral vascular occlusion and acute pulmonary embolism. An attempt was made in all cases to obtain an anticoagulant effect in the blood as soon as possible after the diagnosis had been established. In ten cases heparin was used in combination with dicumarol; in forty cases dicumarol was used alone. Tests of the prothrombin time in each patient were made daily, and an effort was made to keep the prothrombin time between those limits which correspond to the prothrombin time for 10 per cent and 30 per cent prothrombin. The average period of hospitalization for the patients who recovered was twenty-nine days, and the average period in which these patients were maintained on effective anticoagulant therapy (prothrombin less than 30 per cent of normal) was twenty-four days.

When heparin is employed, an immediate anticoagulant effect is obtained. When dicumarol is used alone, there usually is a lapse of approximately from thirty-six to forty-eight hours before the prothrombin level is reduced sufficiently to prevent intravascular clotting. As nearly as could be determined, twenty patients in this series obtained an adequate anticoagulant effect within forty-eight hours from the onset of acute myocardial infarction. In eighteen cases a period of from two to five days elapsed before an adequate effect was obtained, and in twelve cases there was a lapse of more than five days.

In no instance was a serious complication encountered as the result of anticoagulant therapy. Spontaneous hemorrhage into the knee joint occurred in one patient. The effused blood later was aspirated, and aspiration was attended by no residual effects or further tendency toward bleeding. There was one case of mild spontaneous epistaxis which probably was related to the anticoagulant therapy. Gross hematuria was not encountered in any patient, and in only one case was microscopic hematuria found.

In spit of daily determinations of the prothrombin time, there was difficulty in maintenance of the desired deficiency of prothrombin in eighteen cases (36 per cent). There were twelve cases in which the prothrombin decreased to less than 10 per cent of normal, and for six of these patients the intravenous injection of menadione bisulfite was necessary. There were six cases (12 per cent) in which there was a lapse of effective control, meaning that for a day or more the prothrombin content was more than 30 per cent of normal, and the therapy, therefore, was considered to have been temporarily ineffective. One of these cases is of especialinterest since, during a period of ineffective control in which the prothrombin time returned to normal, the patient suffered a second myocardial infarction. These experiences again serve to emphasize the importance of daily determinations of prothrombin time in the control of dosage of the drug, if it is to be used safely and effectively.

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A comparison of the incidence of vascular complications in the control series as reported by Nay and Barnes and the present series is summarized in the following table. Although the present series is small, and it is necessary to wait until results in a larger group have been carefully reviewed before positive conclusions are reached, there can be no question that the incidence of vascular complications in this series has been surprisingly small. Four patients

Complications	Per Cent	
	Nay and Barnes 1945 100 cases	Parker and Barker 1947 50 cases
Vascular complications	37	4
Second myocardial infarction	15	2
Pulmonary embolus	14	(2*)
Cerebrovascular occlusion	8	2
Thrombophlebitis	7	0
Peripheral arterial occlusion	4	(2*)

*Before anticoagulant treatment was started

in the group had secondary vascular complications after acute myocardial infarction. In two of these the vascular complications--pulmonary embolism in one case and embolic occlusion of a brachial artery in another--occurred before anticoagulant therapy was started. One patient, a man sixty-four years of age with hypertensive and organic heart disease, auricular fibrillation, and congestive heart failure, was under treatment in the hospital when acute anterior apical myocardial infarction developed, and four days later left hemiplegia occurred. The cerebrovascular complication arose at a time when the prothrombin was 20 per cent of normal. No additional embolic or thrombotic complications took place, and the patient recovered. In a man fifty-two years of age with hypertension and coronary heart disease with previous congestive heart failure, a second acute myocardial infarction developed a month after his admission to the hospital. As mentioned before, this complication occurred when the effect of dicumarol was inadequate and the patient had a normal prothrombin time. He died suddenly two weeks later, after the onset of auricular fibrillation. Although there were ten patients who, after relief of severe aginal pain attending the acute infarction, experienced subsequent anginal pain during the first two weeks of hospitalization, the case just mentioned constitutes the only one in which clinical signs and positive electrocardiographic changes indicated and extension of the original infarction or a second myocardial infarction.

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Thus 4 per cent (two patients) in this series of fifty patients had secondary vascular complications while they were receiving anticoagulant therapy during their convalescent period in the hospital, in comparison with 37 per cent of patients who had such complications in the previous series in which anticoagulants were not used.

There were five deaths, a mortality rate of 10 per cent. In two cases death occurred suddenly on the second and ninth days after the onset of symptoms of acute myocardial infarction. In the three others there was indication of old healed infarction as well as recent acute infarction, and this was proved at necropsy in two of the three cases. Two of these patients died of congestive heart failure eighteen and twelve days after admission to the hospital. It is considered of especial interest, although not significant, to note that in neither of the two patients who came to necropsy were pulmonary emboli or mural cardiac thrombi found, whereas in eleven deaths with necropsy in the control series, mural thrombi were found in seven instances and pulmonary emboli in five.

The difference in the mortality rate in respect to patients treated with anticoagulants and those not so treated was not notably different: 10 per cent and 13 per cent, respectively. It would seem, therefore, that although there was a marked reduction in the incidence of thrombo-embolic complications among the patients who received anticoagulant therapy, there was little influence on the total mortality rate. (Proc. Staff Meet. Mayo Clinic, 14 May '47 - R.L. Parker et al.)

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Preliminary Report of Experimental Studies of the Heating Effect of Microwaves ("Radar") in Living Tissues: For many years, electrical currents or radiations of very high frequency have played an important role in medicine and surgery for heating of tissues. Starting with the work of d'Arsonval, who first demonstrated in 1890 that high frequency electrical currents of 10,000 cycles per second produced no muscular contractions but only heating when they were passed through the human body, physicians have been employing increasingly higher frequencies for the heating of living tissues. By 1900, physicians were using high frequency currents of from 1,000,000 to 3,000,000 cycles per second (long wave diathermy) and by 1935 electrical currents of still higher frequency--10,000,000 cycles per second at a wave length of 30 meters (short wave diathermy) --were employed. Soon thereafter physicians were employing high frequency radiations at frequencies of 100,000,000 cycles per second at a wave length of 3 meters (ultrashort wave diathermy).

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The authors are now reporting on the use in medicine of high frequency radiations of 3,000,000,000 cycles (3,000 megacyles) per second at a wave length of 10 cm and have called this procedure "microwave therapy".

As soon as the war was over and these workers could turn their attention once more to research, they finally found, at the Massachusetts Institute of Technology, just what they had been seeking for so many years. This was a device manufactured for experimental studies which employed a cavity magnetrc which would produce high frequency radiation at a wave length of 10 cm., at a frequency of 3,000 megacycles per second and with a wattage of 400 watts at peak output.

Dr. J. F. Herrick, with years of experience with the U. S. Signal Corps in studies of radar, begain in vitro experimental studies on microwave therapy. Soon Dr. Ursula Leden, working under the supervison of Dr. Herrick and Dr. Khalil Wakim, inaugurated the experimental studies which are reported herewith

The word "microwave" is a popular term designating a certain range of waves in the radio-frequency spectrum. This range includes those frequencies from approximately 1,000 megacycles per second to 30,000 megacycles per second or higher. When expressed in wave lengths, this region of the spectrum is from 30 cm. to 1 cm.

Microwaves have optical properties. They can be reflected, refracted and diffracted. They can be focused by a suitable type of metal lens into as sharp a beam as a searchlight. (This permitted the use of radar for detecting the periscopes of surfaced submarines as well as a small projectile from a mortar). Microwaves may be selectively absorbed. A new field of research has been developed, known as "microwave spectroscopy," which promises to give valuable information on molecular structure. It was soon discovered that the atmosphere demonstrates selective absorption of the microwaves. The particular microwave frequencies, which the oxygen and water molecules (in an uncondensed atmosphere) absorb, were among the top secrets of the war. Whether or not the various biologic mediums will absorb microwaves selectively is as yet not determined as far as the authors know.

The usual methods of transporting radio energy from transmitter to antenna or from antenna to receiver when working with the lower frequencies can not be used at microwave frequencies. At these frequencies energy is transported alon hollow pipes(wave-guides) or coaxial cables. These wave-guides and coaxial cables are carefully designed according to the frequency to be used. Under certain meteorologic conditions it was discovered that nature forms wave-guides. The propagation of microwaves by the atmosphere proved to be a fundamental wartime problem.

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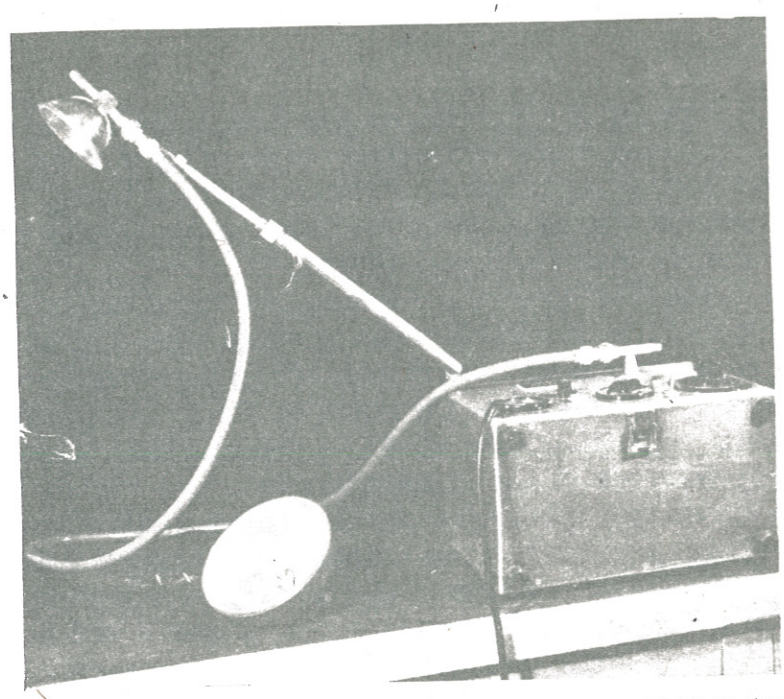
As used in radar to determine the exact location of certain enemy targets, the pulse-echo system was employed. For therapeutic purposes continuously emitted energy is preferred. For this reason a magnetron tube which generates continuous waves is used in physical medicine.

During the War the Radiation Laboratory at the Massachusetts Institute of Technology made extensive studies on the absorption of microwaves by various materials used in insulation as well as by various mediums through which microwaves might be propagated. It was found that the absorption factor of water at 100° F. for microwaves having a frequency of 2,450 megacycles per second was approximately 7,000 times that for radio waves having a frequency of 27 megacycles per second. The latter frequency is that commonly used in the so-called short wave diathermy. The Federal Communications Commission has recently assigned the frequency of 2,450 megacycles per second to physical medicine. The therapeutic value of this particular frequency should be superior to that of the frequencies being used for short wave diathermy provided the output of the microwaves is properly controlled and directed.

The idea of using radio waves of centimeter wave lengths in therapy is not entirely new. German investigators especially have shown considerable interest in this problem. Hollmann in 1938 and 1939 was one of the first to discuss in the literature the possible application of radio waves of 25 cm. wave length for therapy and predicted that these waves could be focused so as to cause heating of the deep tissues without excessive heating of the skin. However, no equipment was available at that time which could generate such high frequency waves at a sufficient output for biologic work. The wartime development of the cavity magnetron tube for microwave radar has made practical application possible.

Up to the present time, the only reports in the literature about the effects of these microwaves on the living organism are several studies conducted by the Armed Forces to dispel fears of possible ill-effects of radar radiations on personnel connected with radar work. These reports are concerned only with exposure to radar pulses--that is very brief, rapid bursts of energy-- and not with exposure to continuous microwave energy.

The equipment which the authors have used for the following experiments produces continuous microwave energy at a frequency of 3,000 megacycles per second corresponding to a wave length of 10 cm. Most of this work was done with a small portable unit containing an air-cooled magnetron tube. The energy is transported by a coaxial cable from the generator to the director. From this hemispherical director, the energy is radiated onto the body. All the work reported here was done with the smaller hemispherical director (shown in the figure on the following page) which has a diameter of 3 1/2 inches (9 cm.).



Small portable experimental model of microwave generator containing an air-cooled multicavity magnetron with maximal output of 125 watts at a frequency of 3,000 megacycles per second. (Weight 34 pounds [15.4 kg.], dimensions 15 by 10½ by 9¾ inches [38 by 27 by 25 cm.]). Two hemispherical directors of different sizes are shown.

The instrument panel is conveniently arranged. A timer is built into the circuit. The filament current is first turned on; then after a time delay, the plate current is turned on. The plate current is controlled by a variac and is read on the meter in milliamperes. The output in watts for this machine has been calculated.

Trained dogs without any anesthesia were used in the majority of the experiments. Pentobarbital sodium anesthesia was used when surgical procedures were necessary for the experiment.

Considerable time was spent in determining the best technic and dosage of microwave exposure. Finally, an output of 75 ma., corresponding to 65 watts, at a spacing of 5 cm. from director to body surface for a period of twenty minutes was found to be both effective and safe.

The measurement of local temperature of tissues provided a difficult problem. Needle thermocouples were inserted into the subcutaneous tissue and muscle at various depths and cutaneous temperatures were taken with contact thermocouples.

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The results of these studies of temperatures of tissues can be analyzed as follows:

> There is no doubt that microwaves can heat tissues. As a matter of fact, by using sufficient output, temperatures can be raised to nearly any desired level. With the technic using 75 ma. plate current and the director at 5 cm. distance for twenty minutes, the rise in cutaneous temperature was usually between 3° and 5° C., and average of from 3.5° to 4° C. Although in some experiments the rise in temperature of muscles was greater than that of the skin, in others this relationship was reversed. On the average no significant difference in the temperature rises of skin, subcutaneous tissue and muscle to 2 cm. depth could be determined. However, the control temperatures of the deeper tissues were higher than those of the skin, so that even with similar rises in all tissue layers, the final temperature of the muscle was greater than that of the subcutaneous tissue and the skin. When rises of temperature in four layers of tissue were measured, it was noted that the rise in the deeper layer of muscle was usually somewhat less than in the more superficial layer.

It was suggested that a spacing of 2 cm. rather than the 5 cm. might provide better transfer of energy. For that reason, a number of experiments were run in which an exposure of 75 ma. or 65 watts at 5 cm. distance was followed by an exposure of 45 ma. or 32.5 watts at 2 cm. Although in some cases a slightly better penetration seemed to be obtained by the exposure at 2 cm., in others the results of the two different technics were almost identical and no significant difference caused generally by the closer spacing could be determined.

In all cases, superficial tissues cool more rapidly than deeper ones. In the intact animals, cooling was always complete and rapid, temperatures returning to their control values within twenty-five or thirty minutes. In the anesthetized animals on which surgical procedures were performed, cooling was much slower and temperatures usually did not return to their control values at all but formed a new base line 1° C. or more above the original control value.

Results of the experiments on blood flow in the femoral vein were quite consistent. Of nine successful experiments, all showed an increase in blood flow after the exposure to microwaves, with an average increase of 109 per cent. The increase in blood flow usually occurred toward the end of the microwave exposure.

The following are some of the salient features of the physiologic effects of microwaves and the heat produced by them on the circulation. In general, it

can be stated that heat, no matter from what source, influences the circulation in several ways.

1. Axon reflex.- The thermal stimulation of sensory receptors in the skin may bring about vasodilatation through the axon reflex. Since the passage of these impulses is away from the central nervous system, rather than toward it, as is usually expected to take place along sensory nerve fibers, Bayliss called them antidromic impulses. Axon reflexes play an important role in the cutaneou vasodilatation observed in subjects exposed to heat. Furthermore, the sympathetic nerves are believed to contain vasodilator fibers. While perfusing the hind limbs of dogs, Burn frequently obtained vasodilatation on stimulation of the lumbar sympathetic chain. He suggested the presence of a general system of vasodilator fibers. Lewis and Pickering presented evidence supporting the existence of sympathetic vasodilator fibers in man. This, however, was denied by Uprus and associates.

2. Metabolites.- The metabolites liberated in the tissues act as direct vasodilators. Heat increases the speed of chemical reactions occurring in the living organism. The metabolites, liberated at a great rate under the influence of heat, exert their well-known direct chemical vasodilator effect on the small vessel bed throughout the body. This brings about two definite effects, namely, (a) an increase in the caliber of the blood vessels, and (b) an increase in the number of patent vessels; that is, under the influence of heat, new vascular channels are widely opened up in addition to the dilatation of those already patent.

3. Vasodilatation from central effects.- With a general rise in temperature of the body, the warmed blood circulating through the heat-regulating centers in the hypothalamus will bring about a discharge of impulses to increase the dissip tion of heat. Consequently, a generalized vasodilatation is produced and heat los from the body is incresed. The pinkish skin after exposure to microwaves, diathermy, hot baths, or any source of heat is a manifesteation of this generalized cutaneous vasodilatation brought about by local and central mechanisms.

4. Effects on heart rate.- Within physiologic limits, the rate of generation and the speed of propagation of impulses are increased under the influence of agents that raise the temperature of the body. This means that a greater numbe of impulses are traveling to the various organs of the heated body. Whenever a general rise in temperature of the body was produced from local heating by microwaves, there was an increase in the rate of the heart. Whenever a general rise in temperature of the body takes place, the metabolic activity of the pacemaker of the heart (sino-auricular node) is augmented and the initiation and rate of passage of the cardiac impulses along the conductive system are increase

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Consequently, the heart speeds up under the influence of heat. In the anesthetized animals which were prepared for studies on flow of blood, the general temperature of the body was raised by the local exposure to microwaves and this led to the increase in heart rate. On the other hand, in the trained animal, exposure to microwaves augmented the local temperature but did not produce a rise in the general temperature of the body. Evidently, the increased dissipation of heat by panting and increased respiration in the trained animal coped with the local increase in production of heat and prevented the general rise of temperature of the body. Consequently, no increase in heart rate was observed in the trained animal. Furthermore, anesthetized animals without any surgical procedure done on them did not have a general rise in the temperature of the body as a result of local exposure to microwaves. This point is still under investigation.

At last there is available a means of heating tissues in which accurate localization can be obtained by direction of a beam of energy toward any surface of the body. The fact that it is possible to focus such radiation may permit even more accurate localization and certainly in the future it will be desired to investigate the possibility of cross-firing two beams at a given spot. The fact that the radiation can be carried for considerable distances along a wave-guide and deflected through a coaxial cable with a director at the end might permit employment of a large microwave machine for treatment of several patients.

Based upon these studies, the authors believe that microwaves are suitable for the heating of living tissues and now propose to inaugurate clinical studies of their application. The wide wariety of patterns for heating of tissues and the possibility of placing the microwave director in any position will provide wide flexibility in therapeutic application. A patient will be completely free to move away from the director at any time. Freedom from pads, encumbering cables and toweling commonly used with short wave diathermy will permit more rapid cooling of the skin. The radiation from the single microwave director can be beamed and localized in the manner of a spotlight, thus facilitating clinical application

These studies indicate a desirable relationship between cutaneous and internal remperatures which permits adequate internal heating without undue heating of the cutaneous surface. It seems that heating by microwaves offers promise of considerable usefulness in the practice of physical medicine. (Proc. Staff Meet., Mayo Clinic, 28 May '47 - F. H. Krusen et al.)

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Rickettsialpox Causative Agent Recovered from a House Mouse: Rickettsia akari, the causative agent of rickettsialpox, was isolated from the blood of persons ill with this disease and from rodent mites Allodermanyssus sanguineus Hirst inhabiting the domicile of ill persons. (Bumed News Letters of 22 November 1946 and 6 December 1946) This paper describes the isolation of R. akari from a house mouse (Mus musculus) trapped on the same premises--a housing development in the city of New York where more than 100 cases of rickettsialpox have occurred.

Approximately 60 house mice were trapped in the basements of this housing development where rodent harborage existed in store rooms and in incinerator ashpits. Engorged mites were occasionally found attached to the mice, the usual site of attachment being the rump. Mites were frequently found inside the box traps after the captured mice were removed.

Through inoculations into laboratory mice of suspensions of tissue from the trapped mice and sub-passage into laboratory mice and guinea pigs the external signs and gross pathological changes typical of rickettsialpox were produced and R. akari was recovered.

Employing guinea pigs, reciprocal cross immunity was demonstrated between the house mouse strain and the human and mite strains. Growth of the house mouse strain in the yolk sacs of fertile eggs was initiated with tunica washings from an infected guinea pig. On successive passages the growth was abundant, and morphologically the organisms could not be distinguished from those of the human strains of R. akari.

A high incidence of immunity to rickettsialpox in the mice trapped at the rickettsialpox focus was indicated by their resistance to challenge with the 10^{-1} dilution of a viable yolk-sac suspension lethal (LD_{50}) for white mice (Swiss strain) in dilutions as high as 10^{-5}. House mice (Mus musculus) trapped in northern Virginia were found to be susceptible to experimental rickettsialpox on a scale comparable to the susceptibility of the Swiss strain.

Evidence of immunity to rickettsialpox was also demonstrated by the complement-fixation test in serums of mice collected at a New York City focus of infection, and no antibodies were found in the serums of normal laboratory mice, or of house mice trapped in northern Virginia.

The results from this study show that the house mouse (Mus musculus) may harbor the infection in nature. These findings suggest methods for the investigation of suspected foci of rodent infection. (Pub. Health Reps., 30 May '47 - R. J. Huebner, et al.)

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Pathological Studies of Intervertebral Discs: Previous studies of pathological material removed at operation on the intervertebral disc left uncertain the relationship between the gross appearance of the disc at the time of operation and many obviously pathological microscopic findings; and left in doubt the prognostic significance of the pathological findings. With these considerations in mind, this study was undertaken.

The intervertebral disc is subject to considerable stress and strain during ordinary activities. It undergoes definite anatomical changes from the time of birth until senescence. Physiological changes as well as pathological findings in intervertebral discs have been described by many observers since the pioneer studies of Schmorl at Dresden reawakened modern interest in this subject. However, microscopic findings in disc tissue removed at operation have been reported only by Deucher and Love; and by Bradford and Spurling who, in their excellent monograph, pay but scant attention to this subject. Therefore it seemed expedient to the authors to report their findings on a series of specimens which had been removed at operation.

The examination of forty lumbosacral intervertebral discs removed at autopsy from the bodies of persons of different age groups revealed certain changes in the cartilage plate, the annulus fibrosus, and the nucleus pulposus which must be considered physiological, being either the result of repeated minute traumatic episodes or of aging.

In comparing the findings in the autopsy control group with those in 182 intervertebral discs partially removed at operation, it was apparent that the difference was in number rather than kind. The principal changes encountered consisted of extensions of the tissue of the nucleus pulposus into the cartilaginous plate; vascularization of this defect; scarring with vascularization of the annulus fibrosus and nucleus pulposus; and granular degeneration, considered the result of desiccation, in the nucleus pulposus.

At the time of operation the disc was described as herniated, bulging, or softened. No significant microscopic differences were found between the discs grouped according to these three descriptions.

Follow-up studies on the surgical cases show good results in 86.7 per cent. The best results were achieved in those cases in which the disc was described at operation as herniated. No relation appears to exist between microscopic findings and end results. (J. Bone & Joint Surg., April '47 - C. Eckert and A. Decker)

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The Recognition and Treatment of Carbon Tetrachloride Poisoning: Carbon tetrachloride is an excellent non-inflammable solvent which is suitable for many needs in the various activities of the Navy both ashore and afloat. However, it is one of the most toxic solvents and, in spite of continual warnings, cases of carbon tetrachloride poisoning continue to appear. It is therefore fitting and proper that medical officers of the Navy learn how to recognize and treat this poisoning.

The following is from an article by the Council on Industrial Health of the American Medical Association which appeared in complete form in the 30 November 1946 issue of the Journal of the American Medical Association.

Carbon Tetrachloride Poisoning - Signs and Symptoms. Obese persons, alcoholic addicts and undernourished persons are likely to be especially susceptible to carbon tetrachloride injury, as are those with diabetes, liver or kidney disease, jaundice, pulmonary or heart disease, or peptic ulcers. The assignment of such persons to work where they may be exposed to the solvent can be avoided by preplacement physical examination.

The signs and symptoms of poisoning from carbon tetrachloride differ somewhat according to the nature of the exposure:

1. A single exposure to a high vapor concentration may cause a feeling of fulness in the head and mental confusion, followed by headache, dizziness, nausea, and stupor or loss of consciousness. Death due to respiratory failure may follow if the person is not promptly removed to a safe area. Exposure to heavy concentrations may result in the delayed appearance of systemic poisoning with liver and kidney symptoms.

2. Repeated or prolonged inhalation of air containing unsafe concentrations of vapor may cause headaches, fatigue, nausea, vomiting, dizziness, visual disturbances, and coughing of bloody mucus, followed in severe cases by acute nephritis, jaundice, or toxic hepatitis. Injury to the central nervous system may occur.

3. Repeated contact with the skin removes the sebum and thus may result in redness, roughness, chapping and subsequent infections. The statement occurs occasionally in the literature that symptoms of systemic intoxication may result from prolonged skin contact, particularly in cases of burned areas or open cut wounds. It may be that symptoms attributed to absorption through the skin are due to inhalation of vapor at the time of skin contact.

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4. Cases of poisoning by ingestion have been reported following the use of carbon tetrachloride as an anthelmintic. Effects are nausea, vomiting, abdominal distress, diarrhea, bloody stools, and unconsciousness or coma. Later effects may be jaundice, cirrhosis of the liver, and damage to the kidneys, heart, adrenal glands, or nervous system. The ingestion of more than from 3 to 4 cc. may cause death.

Most organic solvents, including benzene, methyl alcohol and carbon disulfide, and many metallic poisons as well, cause headache, vertigo, nausea, and diarrhea, and symptoms of liver damage have been reported among the effects of intoxication with a wide variety of substances.

Treatment. Contact with the Eyes. - If carbon tetrachloride spills or splashes into the eyes, the first step is to wash them with large amounts of water for at least fifteen minutes. It is advisable to use a low pressure supply of water at room temperature in order to minimize the pain and discomfort caused by this procedure. Thereafter, symptomatic therapy should be employed if indicated.

Contact with the Skin. - Wash the skin thoroughly with a mild soap and warm water. After this an ointment containing petrolatum or lanolin should be applied in order to replace partially the natural skin oils. For cases of dermatitis or for signs and symptoms of generalized poisoning, symptomatic treatment is recommended.

Inhalation of the Vapor. - A person showing symptoms such as headache, nausea, dizziness, or unconsciousness should be immediately removed to an area where the air is fresh and uncontaminated by carbon tetrachloride vapors. He should rest quietly and be kept warm. In case breathing has stopped, artificial respiration such as that obtained by the prone pressure or by the Eve rocking method should be used. If oxygen inhalation apparatus is available, oxygen should be administered. If the patient is conscious, hot tea or coffee may be given as a stimulant. An alcoholic stimulant or epinephrine should never be given to a person overcome by carbon tetrachloride.

Persons with only mild symptoms of solvent intoxication usually recover uneventfully under symptomatic treatment if they are protected from further inhalation of excessive amounts of solvent vapors. In more severe cases in which there are indications of liver or kidney involvement, carefully considered therapy is required.

Ingestion of the Liquid. - If it is suspected or known that a person has swallowed carbon tetrachloride, the first step is the prompt elimination of unabsorbed portions of the solvent. The patient should be made to vomit by drinking a glass of mustard water, lukewarm salty water, or warm soapy water. If

necessary, the patient should be encouraged to stick his finger down his throat to induce vomiting. This procedure should be repeated at least three times. Following this, 1 tablespoon of epsom salt in water should be administered. (CAUTION: Never give alcohol, fats, oils, or epinephrine to a person who has been exposed to carbon tetrachloride.)

Symptoms of systemic illness should be watched for. They may develop quickly or they may be delayed several days.

Systemic Therapy. Davis and Hanelin made the following recommendations:

Immediate removal or withdrawal of the poison is essential to successful treatment. If one bears in mind the complex clinicopathologic picture and disruption of the normal body chemistry, the treatment resolves itself into the following procedures:

1. Intravenous hypertonic glucose and Hartman's solution to combat acidosis and liver dysfunction.
2. Insulin in small doses, usually from 2 to 3 units of U 20, to facilitate carbohydrate, fat, and protein metabolism.
3. Calcium gluconate or calcium lactate, as recommended by Minot and Cutler.
4. Papaverine hydrochloride or sulfate, an alkaloid of opium, 1/2 g grain (32 mg.) administered intravenously when the heart and kidney are affected and when spastic states are present.
5. Sodium decholin as a diuretic to facilitate the action of papaverine. (Some authortities state, however, that sodium decholin is given as a cholagogue; it may have slight diuretic effect, but diuetics do not facilitate the action of papaverine.)
6. The xanthine diuretics to relive the coronary embarrassment and to facilitate diuresis; however, the council believes the papaverine effect is slightly better.
7. Never use epinephrine, since the Jourdans have observed syncope subsequent to its use in carbon tetrachloride poisoning.
8. Methylene blue may be used as recommended by Nelson, but the council has had no experience with this method. (Recent reports indicate that the use of methylene blue may be followed by untoward developments.)
9. Oxygen inhalation may be necessary if pneumonic symptoms are present.
10. The administration of high carbohydrate diet is essential.
11. Blood transfusions may be necessary for anemia.

According to Allison, calcium and glucose, are definitely indicated in the treatment of carbon tetrachloride poisoning.

(Not Restricted)

Insulin and diuretics may not be necessary in every case. The danger of administering epinephrine in cases of carbon tetrachloride poisoning should be emphasized.

The amino acid methionine (dose 2 Gm. or more daily) has recently been used with apparent success in therapy of several cases of carbon tetrachloride poisoning. Based on animal experimentation, treatment with choline chloride (from 2 to 5 Gm. daily) and cystine, together with a high protein, high carbohydrate, low fat diet, is suggested by one authority. A case of acute systemic poisoning resulting from accidental ingestion of a sizable amount of the solvent, reported by Beattie, Herbert, Wechtel, and Steele, was successfully treated with a combination of casein digest and methionine. Subsequently, a series of 6 patients, 2 of them acutely ill, who had suffered industrial exposures to extremely high concentrations of carbon tetrachloride vapor, were successfully treated by Eddy with intravenous glucose, a high protein, high carbohydrate, and low fat diet, together with methionine in doses of 2 Gm. every four hours. The most seriously ill of these patients received 68 Gm. of methionine during the course of treatment. (Professional Div., BuMed)

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Reports on USN Research Projects:

(Not Restricted)

The Effect of Peritoneal Irrigation on Experimental Methyl Alcohol Toxicity. From the data obtained from the experimental and clinical treatment of acute renal failure by peritoneal lavage and the evidence of physiologists to show that the peritoneum is a dialyzing membrane through which crystalloids diffuse, it was assumed that water-soluble toxic substances can be removed from the body by peritoneal lavage. Such a method would be especially applicable to substances such as methyl alcohol and long acting barbiturates which are slowly metabolized and not rapidly excreted. In this study, using white rats, it has been shown that methyl alcohol can be removed in sufficient concentrations by peritoneal washing over a period of from 8 to 10 hours to protect the animals from lethal doses. When the irrigations were continued over longer periods, additional small quantities of methyl alcohol were recovered. The treated rats were much more active during the lavage period than those not treated. They apparently also recovered from nembutal anesthesia more quickly. The absence of adhesions, except at the sites of incision, is noteworthy. (NM 007 031, Rep. No. 3, 22 April '47 - Nav. Med. Res. Inst., Bethesda, Md. - W. S. Blakemore et al.)

(Not Restricted)

Studies on the Acute and Chronic Toxicity of Methyl Alcohol for the White Rat. This investigation was undertaken to determine what factors are responsible for lessening or increasing the toxicity of methyl alcohol. The white rat was chosen as the test animal because of susceptibility to poisoning and availability for use in large numbers.

(Not Restricted)

The acute oral LD_{50} of methyl alcohol is 15.5 ml.per Kg. for white rats. This value is double that commonly reported for ethyl alcohol. Death is the result of respiratory failure of central origin. Convulsions were not observed in any of the animals. The chief pharmacological effect was depression of the central nervous system. This frequently commenced within five minutes after the methyl alcohol was administered. Death occurred in the majority of animals within 24 hours, although occasionally animals died within four hours or survived as long as 72 hours. The common gross changes observed at autopsy were hyperemia of the gastro-intestinal tract and edema of the brain and meninges.

Although methyl alcohol is less toxic than ethyl alcohol in single acute doses it is much more toxic when given in fractional doses over a period of time due to the slower rate of oxidation and excretion. Young rats tolerate single daily doses as great as 6 ml.per Kg. for a period of thirty days without untoward effect This is the upper limit that can be tolerated, however, because a dose of 9 ml. per given for a period of three days caused 100 per cent mortality.

Of the compounds tested only glucose with insulin had any significant effect on the LD_{90} of single acute doses of methyl alcohol. The combination of insulin and glucose saved five of six animals. The acceleration of ethyl alcohol oxidation by glucose and insulin has been demonstrated in both man and animals. It is possible that the protective action of the glucose is due to a similarly increase rate of oxidation of methyl alcohol. This point will be investigated in a subsequer study. Dinitrophenol, which increases the rate of oxidation of ethyl alcohol, in dogs had no effect on acute toxicity in the amounts given. Amino acids, which similarly affect the oxidation of ethyl alcohol, were without effect. Sodium bicarbonate was tested, because it has been used to combat the acidosis appearing in methyl alcohol poisoning. It failed to exert any beneficial effects. When water alone was given there was a slight decrease in the mortality. Dehydration in comatose animals may therefore play a part in enhancing the toxicity of methyl alcohol.

None of the metabolites tested offered any more protection against the three day fractional dose toxicity than was afforded by water. Therefore, the protection offered by dinitrophenol and amigen in this series might be attributed to the water content of the test solution. One-third of the animals could be saved by the daily administration of water when food also is available.

Ethyl alcohol had no effect on the survival rate of rats poisoned with methyl alcohol. In the higher doses of ethyl alcohol, the toxic effects were synergistic, death following the second dose of methyl alcohol. This raises the question concerning the advisability of using ethyl alcohol for the treatment of methyl alcohol poisoning in man.

(Not Restricted)

There was no significant mortality in the rats ingesting five per cent methyl alcohol, group B; five per cent ethyl alcohol, group C; or a combination of the two, group D; over a period of 150 days.

Two-tenths per cent dinitrophenol offered a partial protection against the mortality and weight loss caused by chronic ingestion of 10 per cent methyl alcohol, but glucose, amigen and sodium bicarbonate were without effect. (NM 007 031, Rep. No. 2, 15 April '47 - Nav. Med. Res. Inst., Bethesda, Md. - C. H. Hine et al.)

(Not Restricted)

A Colorimetric Method for the Determination of Methyl Alcohol in Blood, Tissue, and the Expired Air. The methods for methyl alcohol determination are similar to those in general use for ethyl alcohol; however, there are far fewer acceptable technics. The most acceptable methods are precise, but have certain disadvantages.

A simple precise procedure was desired that could be adapted to a relatively large range of methyl alcohol concentrations. The method of analysis of ethyl alcohol of Kozelka and Hine was modified for this purpose.

The modification evolved is based on the acid dichromate oxidation of methyl alcohol with colorimetric estimation of the chromate formed. When methyl alcohol is added to tissues in vitro or introduced into the expired air, it may be recovered in the amount of 97 per cent or more over a wide range of values (0.5 to 1000 mg.). When dealing with smaller amounts of methyl alcohol (0.1 to 0.4 mg.) in blood, modifications of the method will give recoveries in the order of $\pm$ 0.01 mg. (NM 007 031, Rep. No. 1, 8 April '47 - Nav. Med. Res. Inst., Bethesda, Md. - C. H. Hine et al.)

(Not Restricted)

Contact Acaricides: Toxicity of Six Insecticides to Adult Ticks (Dermacentor Andersoni, Stiles). The acaricidal properties of six insecticides have been determined in order to select a standard compound with which new materials can be compared. DDT, hexachlorocyclohexane, Velsicol 1068, nicotine, piperonyl butoxide, and rotenone, applied to small squares of cloth, were tested as contact poisons to adult ticks (Dermacentor andersoni).

In considering these compounds for personal protection from ticks, certain criteria are needed to define a satisfactory acaricide. The compound should be safe for use on man and domestic animals, nonstaining and without an objectionable odor. In addition, a maximum contact period of 30 minutes should be allowed for the ticks to acquire a sufficient quantity of the chemical to inactivate them within two hours. These time limits are based upon the assumptions that on man

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ticks can cross treated clothing and reach the skin in 30 minutes and that they require a feeding period of two hours in order to transmit the rickettsia of Rocky Mountain spotted fever. When the data for these tests in which the contact period varied is graphed, none of the compounds reacts quickly enough to fall within these arbitrary time limits. Nicotine appears satisfactory, but a certain percentage of the ticks recovered within 48 hours.

Hexachlorocyclohexane, though not entirely satisfactory, permanently inactivates ticks more rapidly and remains toxic to ticks longer than any of the other compounds tested. Therefore, this compound will be used as the standard acaricide with which all new compounds will be compared. (NM 005 014, Rep. No. 1, 12 May '47 - Nav. Med. Res. Inst., Bethesda, Md., - L. A. Jachowski, Jr., and C. Schultz)

(Not Restricted)
Two Molluscicides of Promise in Schistosomiasis. Methods of control and treatment of schistosomiasis in current practice are admittedly inadequate, Eradication of the snail intermediate hosts of the schistosomes is as yet impractical, except in the smallest areas, and has been accomplished even then only with repeated applications of high concentrations of toxicants after clearing the areas of water plants and debris. Treatment of the disease with the best drugs now in use often fails.

In the face of these facts, the development of a practical, effective molluscicide assumes great importance. Ideally, such a molluscicide must be toxic to snails in low concentrations, yet nonpoisonous to human beings and to domestic animals which use the water, and to plant crops which are grown in irrigated fields: it must be sufficiently water-soluble to reach the snail tissues, but not so soluble that it is lost quickly; it must not be greatly affected by the organic content of the water, and it should be available in quantity at a reasonable price. This study was undertaken to find or develop a molluscicide, which would qualify in as many of these particulars as possible.

Two compounds, dinitro-o-cyclohexylphenol and the dicyclohexylamine salt of dinitro-o-cyclohexylphenol were provided for testing by the Dow Chemical Company which suggested their possible molluscicidal activity on the basis of reports concerning the use of these compounds in the Philippines by the Army Commission on Schistosomiasis. Since the preliminary reports on the use of these compounds gave only scant data, it seemed advisable to make more detailed evaluations of the chemicals in the laboratory.

Dinitro-o-cyclohexylphenol and the dicyclohexylamine salt, Dow K-604, showed high molluscicidal efficiency in laboratory tests, the former being

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slightly more toxic to snails. Concentrations of 2 ppm. of either compound killed the three species of schistosome-bearing snails tested in aerated aquaria provided with soil, water plants, and goldfish.

Both the compounds were toxic to goldfish at molluscicidal concentrations.

No phytotoxic activity was noted after a week's exposure of Elodea, duckweed, and green alga to concentrations of the compounds which were lethal to the snails.

Preliminary studies indicate that concentrated solutions of the compounds were not harmful to small mammals and that field trial of these substances is warranted. (X-535, Rep. No. 10, 6 May '47 - Nav. Med. Res. Inst., Bethesda, Md. - M. A. Stirewalt and R. E. Kuntz)

(Not Restricted)

Treatment of Regulation Navy Webbing Belts to Preserve Marks of Identification. It has been proved that the regulation navy webbing belt with the metal identification tag riveted thereto furnished means of identification in cases of exposure to extreme heat and open flame. Untreated belts, as well as the belts treated with flameproofing agents, withstood the ravages of the tests used. Further study and tests would be required to develop a method of treating the webbing so as to strengthen its resistance to heat and open flame. (NM 012 006, Rep. No. 1, 29 April L47 - Nav. Med. Res. Inst., Bethesda, Md. - B. E. Jennings.)

(Not Restricted)

A Modification of the Iodine Pentoxide Method for the Analysis of Carbon Monoxide in Small Gas Samples. A survey of the literature indicates that probably the most reliable method used for analysis of CO is the one in which the gas sample, after being freed of moisture and other contaminants, reacts with solid I_2O_5 to liberate iodine. The I_2 is generally measured by titration, from which the amount of CO present can be computed. It was decided to modify this method for the analysis of very small samples so that it might be used in alveolar air studies.

By using a photometric method, the apparatus was modified to reduce the internal volume of the system to about 10-15 ml., reduce size and variability of the blank, and increase the precision and speed of determining the amount of iodine released.

Using samples of about 26 ml. a series of determinations was made on five standard samples covering a range of from 60 to 450 ppm. The mean values averaged about 3 per cent below those obtained with apparatus set up

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for the iodine pentoxide method for larger test samples and concentrations as calculated at the National Bureau of Standards, and the standard deviations averaged about 4 ppm. (X-417, Rep. No. 11, 7 March '47 - Nav. Med. Res. Inst., Bethesda, Md. - G. C. Pitts)

NOTE: Those interested in seeing copies of the complete reports should address their request to the research activity from which the report originates.

Opinions or conclusions contained in these reports are those of the authors. They are not to be construed as necessarily reflecting the views or the endorsement of the Navy Department. Reference may be made to those reports marked "Not Restricted" in the same way as to published articles noting authors, title, source, date, project number, and report number. No part of the content of RESTRICTED reports may be published, reproduced, or referred to in articles for publication without permission obtained through the Bureau of Medicine and Surgery.

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(Not Restricted)

Refresher Course Available to Regular and Reserve Medical Officers at Naval Medical School, Bethesda, Md.: A basic refresher course for medical officers will convene at the Naval Medical School, Bethesda, Maryland, on 6 September 1947 and will extend until 28 February 1948.

This course is concentrated, covering modern concepts in clinical medicine and surgery and the various specialties in laboratory medicine, together with subjects particularly applicable to Naval medicine such as aviation medicine, submarine medicine, deep sea diving, and medical logistics. An eight-day session on the medical aspects of atomic warfare and radioactive substances will also be included as part of the course.

Medical officers of the Reserve and regular Navy up to and including the rank of lieutenant commander are eligible for consideration. Priority will be given to medical officers of the regular Navy and to those of the Reserve who request transfer to the regular Navy. No service agreement is necessary. It is contemplated that the quota for this class will be 20. Applications for this course are desired. They should reach BuMed prior to 1 August 1947 and may be made by despatch. (Professional Div., BuMed)

(Not Restricted)

Official Changes in BuMed Section of Catalog of Navy Material: The following items are now available for issue by Naval Medical Supply Depots:

Expend-ability	JAN No.	Nomenclature and Description	Unit	Standard Unit Price
X	1-168-350	b-Dimethylaminoethyl Benzhydryl Ether Hydrochloride Capsules, 0.05 Gm. (3/4 gr.), 100s: (Benadryl).	Btl	$ 1.49
	(Newly Standardized Item).			
X	1-269-360	Meperidine Hydrochloride Injection, 50 mg. per cc., 30 cc: NNR; (Demerol); for parenteral use; subject to damage by freezing.	Btl	.99
	(Newly Standardized Item).			
X	1-269-375	Meperidine Hydrochloride Tablets, 0.05 Gm. (3/4 gr.), 100s: NNR; (Demerol).	Btl	1.68
	(Newly Standardized Item).			
X	2-012-800	Cloth, Impervious, 36 inches by 5 yards:	Roll	2.66
	(Newly Standardized Item).			
	3-220-770	Curette, Ear, Foreign Body, Billeau, Medium: (Ear loop). Flexible; oval shaped.	Ea	1.35

(Former Navy No. S3-985 not previously cataloged in Preliminary Edition Catalog of Navy Material, BuMed Section.)

(MatDiv., BuMed)

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(Not Restricted)

Meeting of Board of Consultants to the Bureau of Medicine and Surgery:

The Board of Consultants to theBureau of Medicine and Surgery met on 16 June 1947 at the National Naval Medical Center, Bethesda, Maryland, in connection with the Graduate Medical Training Program of the Navy. The meeting of this advisory board was for the purpose of reviewing the progress made during the first year that the program, as such, has been in effect, and to formulate future plans. The program, as presently organized, provides for postgraduate residency training in 8 of the larger Naval Hospitals, namely, Bethesda, Chelsea, Great Lakes, Long Beach, Oakland, Philadelphia, San Diego, and St. Albans, and for residencies, courses, and fellowships in civilian hospitals and medical center The purpose of such training is to increase the proficiency of Naval medical officers and to continue to provide the Navy with well-trained medical specialists. Under this plan, the Navy now has 156 medical officers receiving residency training in the naval hospitals listed above, and 92 medical officers in training in prominent civilian institutions.

The members of the Board of Consultants, most of whom are Naval Reserve officers and served during the war, represent specialties in which American specialty boards have been created. As members of these boards, they are assisting the Navy in establishing and maintaining a program which will provide training that meets the standards of the various American Specialty Boards.

Those attending the meeting were: Dr. W. M. Craig, Chairman (Mayo Clinic, Rochester, Minnesota), Dr. Howard K. Gray (Mayo Clinic, Rochester, Minnesota), Dr. Marion B. Sulzberger (New York Skin and Cancer Unit, New York Postgradua Medical School, New York City), Dr. Alphonse McMahon (St. Louis University, St. Louis, Missouri), Dr. E. N. Broyles (Johns Hopkins University, Baltimore, Maryland), Dr. Donald Hale (Cleveland Clinic, Cleveland, Ohio), Dr. Paul Titus (St. Margaret's Hospital, Pittsburgh, Pennsylvania), Dr. Joseph S. Barr (Harvard University, Boston, Massachusetts), Dr. J. Roscoe Miller (Northwestern University, Chicago, Illinois), Dr. George M. Lyon (St. Mary's Hospital, Huntington, West Virginia), Dr. Wendell Scott (Washington University, St. Louis, Missouri), Dr. Paul Greeley (University of Illinois, Chicago, Illinois), Dr. M. G. Westmoreland (College of American Pathologists, Chicago, Illinois). Other members of the Board are: Dr. F. J. Braceland (Mayo Clinic, Rochester, Minnesota), Dr. Arthur M. Culler (Ohio State University, Columbus, Ohio), Dr. A. C. Ivy (University of Illinois, Chicago, Illinois), Dr. Shields Warren (Harvard University, Boston, Massachusetts), Dr. Clark Johnson (University of California, San Francisco, California.

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(Not Restricted)

Postgraduate Medical Training Possibilities for Reserve Medical Officers, Particularly Those Recently Ordered to Active Duty: The attention of Reserve medical officers, particularly those recently ordered to active duty, is invited to the following information concerning postgraduate medical training that is available to them.

COURSES

1. Courses for which no definite length of obligated service (time before expected date of release from active duty) is required. (It is not practical, however, to assign medical officers to these courses immediately prior to the time of their eligibility for release from active duty; or to have medical officers travel great distances in order to attend a course of instruction unless the medical officer's services may be utilized in the specialty for a reasonable length of time after the completion of the period of instruction.)

(a) Photofluorographic Interpretation - from 6 to 10 weeks at the U. S. Naval Medical School, Bethesda, Maryland. Beginning at weekly intervals, the course includes instruction and familiarization with the Navy's Tuberculosis Control Program, and provides an excellent background for later specialization in diseases of the chest, internal medicine, or radiology.

(b) Radiological Safety - 6 weeks at Radiological Safety School, Treasure Island, California. The course deals with radioactive ships, decontamination procedures, protection of personnel, and effects of atomic radiation on military and civil personnel. (See the 6 June 1947 issue of Bumed News Letter for definition of atomic terms.)

(c) Broncho-esophagology - 2 weeks' course in a civilian institution available about every 3 or 4 months. The applicant must have had sufficient background and experience prior to beginning active duty. The tuition will be paid from training funds.

(d) Basic Refresher Course - 6 months (6 Sept. '47 - 28 Feb. '48) at the Naval Medical School, Bethesda, Maryland. This course is concentrated, covering modern concepts in clinical medicine and surgery and the various specialties in laboratory medicine, together with subjects particularly applicable to Naval medicine such as aviation medicine, submarine medicine, deep sea diving, and medical logistics. An eight-day session on the medical aspects of atomic warfare and radioactive substances will also be included as part of the course. It is contemplated that the quota for this class will be 20. Applications for this course should reach BuMed prior to 1 August 1947 and may be made by despatch.

(Not Restricted)

(e) Various short courses at civilian institutions - If the medical officer has in mind any short course in which he desires to enroll and no relief for him is required, he may submit a request for such training. If there is doubt concerning eligibility of the candidate, the Professional Division of BuMed will provide information when commanding officers are unable to do so. Each request will be judged on its individual merits.

2. Courses for which obligated service of from 12 to 18 months after completion of the period of instruction is required.

(a) Electro-encephalography - 6 months' course at U. S. Naval Hospital, Bethesda, Maryland, involving interpretation of the electro-encephalographic tracing and the use of a six channel machine. It is hoped that medical officers who are accepted for this course will use it as an introduction to psychiatry or neurology. Previous training or experience is not necessary.

(b) Aviation Medicine - 3 months' course at U. S. Naval School of Aviation Medicine and Research at Pensacola, Florida. Applications are desired now for the September 1947 and December 1947 classes. All medical officers who complete the course are designated aviation medical examiners. From those receiving this designation a limited number are selected for flight indoctrination which is of seven weeks' duration. Those who successfully complete this phase of training are designated flight surgeons. Both aviation medical examiners and flight surgeons are eligible for assignment to duty aboard aircraft carriers, with air groups, with aviation research, and with other aviation activities.

(c) Submarine Medicine - 8-1/2 months' course with 10 weeks at the U.S. Naval Deep Sea Diving School and U.S. Experimental Diving Unit at Washington, D. C., and 6 months at the U. S. Submarine School, New London, Connecticut. The training includes instruction in the medical and practical aspects of deep sea diving as well as submarine medicine. There is no obligated service requirement for this course but it is desired that trainees devote one assignmen to this specialty (this constitutes a change in the requirements as contained in the reference noted below). Trainees may remain in submarine medicine or transfer to other fields at their own desire. The course is considered an entree to a wide field of naval medical research. For additional information and extra-pay assignments in this specialty, see Bumed News Letter of 6 June 1947, p. 22.

(d) Radiochemistry - 4 months' course at the University of California, Berkeley, California, for selected medical officers who were in the upper half of the class in medical school and who have had some previous training and experience in internal medicine or research in clinical medicine. (See 6 June 1947 issue of Bumed News Letter for definition of atomic terms.)

(Not Restricted)

(e) Research Training and other special courses or specific projects - Training is possible for Reserve medical officers who have had preliminary experience and training in research in specialties not covered by one of the 15 recognized American Specialty Boards. Requests may be submitted to BuMed and each case will be judged on its individual merits.

3. The following courses in civilian institutions and Naval activities are available to Reserve medical officers providing (1) their application is accompanied by a request for transfer to the regular Navy and (2) contains a one-year service agreement, which is an agreement not to resign during the course and to serve in the Navy one year after the completion of the course. A three-year service agreement is required for certain highly specialized courses:

(a) Physiology - A Master's Degree is possible and research is encouraged in acceleration or the medical aspects of deep sea diving. Work in both high and low pressure chambers can be arranged. Duty with the large man-carrying centrifuge is possible for certain medical officers.

(b) Preventive medicine with majors in public health, industrial medicine, and tropical medicine.

(c) Nuclear Physics (course available at stated intervals).

(d) Application of Radioactive Substances to the Medical Sciences.

(e) Radiochemistry -courses of from 4 months to 1 year are possible.

(f) Radiological Safety - long courses for those medical officers who are to staff the safety laboratories.

The Navy has unexcelled material on atomic energy in relation to medicine as a result of the "Cross Roads" Operation. This special field is the newest in the medical world and the possibilities for further training in the Navy are great for the younger group of medical officers. Ship propulsion by atomic power, aircraft propulsion by atomic power, and other developments and uses of atomic power rest on the protection of the health of persons operating these plants. This presents a challenge to the medical corps to make it possible for this work to progress. The use of radioactive substances in the treatment of disease is being investigated in several Naval activities and civilian institutions.

(Not Restricted)

RESIDENCIES

The following residencies are open to Reserve medical officers providing their application (1) is accompanied by a request for transfer to the regular Navy, and (2) contains an agreement not to resign during the residency and to serve in the Navy one year after the completion of the residency.

Anesthesiology
Chest Diseases
Dermatology
Internal Medicine
Neurology
Neurosurgery
Obstetrics and Gynecology
Ophthalmology
Orthopedic Surgery
Otolaryngology
Pathology
Pediatrics
Plastic Surgery
Proctology
Psychiatry
Radiology
Surgery
Thoracic Surgery
Urology

GENERAL INFORMATION

Reserve medical officers who express a desire to transfer to the regular Navy will be given preference in all cases.

As a part of the general training and education of Naval medical officers, a tour of duty at sea or foreign shore is required on a rotational basis. This provides opportunity for world-wide travel and experience necessary to round out a satisfactory career in the Naval Service. Requests for assignment to sea duty on board ship or on foreign shore may be submitted direct to BuMed. It is the desire of the Bureau that as many as possible of the Reserve officers just ordered to active duty have an opportunity for a short tour of sea duty during their two-year period of obligated service in order that they may see varied phases of the Naval medical service and thus more clearly determine their desires relative to careers in the U.S. Navy by transfer appointment therein.

Reserve medical officers are eligible for consideration for training in civilian institutions in all specialties providing they request transfer to the regular Navy and meet the eligibility requirements (see the 20 June 1947 issue of Bumed News Letter for complete list of openings for training in civilian institutions.)

The application form for postgraduate medical training was contained in Bumed News Letter, dated 23 May 1947 p. 22. Access to previous issues of the News Letter may be obtained at any Naval medical activity or copies will be furnished upon request to the Bureau of Medicine and Surgery. (Professional Div., BuMed)

(Not Restricted)
General Order
No. 248
Navy Department
Washington, D. C., 26 March 1947

Transportation or Retention of Cats, Dogs, Monkeys, and Other Living Animals on Board Naval Vessels and Aircraft.

1. General Orders 29 and 199 are hereby canceled.

2. Cats, dogs, and monkeys shall not be permitted aboard any naval vessel or aircraft for transportation or for any other purpose, unless:

(a) The owner submits to the commanding officer or plane commander satisfactory evidence that the animal has been immunized with an approved rabies vaccine within a previous 6 months' period.

(b) The owner submits, in addition, evidence that a veterinarian or medical officer has examined and found the animal to be apparently free of demonstrable diseases involving emaciation, lesions of the skin, nervous system disturbances, jaundice, diarrhea, or evidence of any other disease which may present a human health hazard.

3. Compliance with the regulations stated in paragraph 2 will fulfill the requirements of the United States Public Health Service for importation of pet cats, dogs, and monkeys into the United States, its territories and possessions. The individual, however, must make a sworn statement that immunization has been carried out as required in paragraph 2 (a), and that physical inspection (par. 2 (b)) was carried out within 10 days prior to departure for the United States. This statement will be presented to the United States Public Health Service representative, or Collector of Customs, upon arrival.

4. Additional requirements to comply with certain regulations issued by the Department of the Interior and the Department of Agriculture are as follows:

(a) The importation of monkeys into the United States, its territories or possessions, requires that a permit for entry be obtained from the Department of the Interior and be presented to the Collector of Customs.

(b) Collies, shepherds, and other dogs, imported from any part of the world other than Canada, Mexico, and countries of Central America and the West Indies, which are to be used in the handling of sheep or other livestock, must be declared to the Collector of Customs for inspection and quarantine at the port of entry.

(Not Restricted)

5. Animals other than dogs, cats, or monkeys shall not be permitted on board naval vessels or aircraft, except for purposes of transportation for scientific, educational, or strictly military needs. In such instances the commanding officer or plane commander shall not permit the landing of such animals at any port of arrival until permission is obtained from the Collector of Customs (continental United States, Territories, and possessions) or from the senior officer present ashore at naval bases located in areas where there is no Collector of Customs.

6. When importation of animals other than cats, dogs, and monkeys is contemplated, and authorized under the restrictive conditions outlined in paragraph 5, it is advisable to obtain, in advance, the specific importation requirements which must be met at the port of entry, in order to insure that entry will be permitted. In many instances a permit from the Department of Interior, Department of Agriculture, or other governmental agency may be required. Information on current importation regulations may be obtained in specific instances, upon request to the Bureau of Medicine and Surgery.

7. In order to prevent the introduction or dissemination of psittacosis (a virus disease transmissible to humans), no person shall be permitted to take or to retain on board a naval vessel or aircraft any bird of the parrot family regardless of purpose. The term "birds of the parrot family" is held to include all birds commonly known as parrots, Amazons, Mexican double heads, African grays, cockatoos, macaws, parrakeets, love birds, lories. lorikeets, and all similar birds.

(S) James Forrestal,
Secretary of the Navy.

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Circular Letter 47-73 12 June 1947 (Not Restricted)

To: All Ships and Stations

Subj: Gas and Gas Cylinders, modification of stocking and issue of

Ref: (a) BuMed Circular Letter 47-33 of 17 March 1947

This letter from the Chief of BuMed states that the issue of medicinal gas and gas cylinders by elements of the Naval Medical Supply System is

(Not Restricted)

being discontinued effective 1 July 1947. Instructions are given for procurement subsequent to 1 July 1947 as well as for the disposition of empty cylinders that are on hand and in excess of the needs of local activity on 1 July 1947 and subsequently.

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Circular Letter 47-74 16 June 1947 (Not Restricted)

To: MedOfsCom., U.S. Naval Hospitals
U.S. Naval Medical Supply Depots
National Naval Medical Center, Bethesda, Md.
U.S. Naval Medical Center, Guam, M.I.

Subj: Periodic Pay Increases.

Ref: (a) NCPI 195 (Rev. II).

This letter from the Chief of BuMed states that a review of copies of Personnel Actions (NAVEXOS-1200 Rev. 3-45) shows that in some instances civilian employees serving under temporary appointments are being granted periodic pay increases. It is pointed out that employees occupying positions designated as temporary by law or established for definite periods of one year or less and employees appointed under Section 2 of Temporary Civil Service Regulation VIII are not eligible for periodic pay increases. Action is to be initiated by Medical Officer in Command to recover funds expended for payment of any such increases.

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Circular Letter No. 47-75 16 June 1947 (Not Restricted)

To: All NavHosps and HospShips.

Subj: Preliminary Physical Examination of Candidates for the Naval Academy.

Ref: (a) ManMedDept, Par. 2115.
(b) Regulations governing the Admission of Candidates into the U.S. Naval Academy as Midshipmen and Sample questions. NavPers 15,010 (Edition in effect).

Encl: 1. (HW) Medical Questionnaire.
2. (HW) Reading Aloud Test for Use in the Physical Examination of Candidates for the U.S. Naval Academy.

(Not Restricted)

1. References (a) and (b) contain the present regulations relative to preliminary examination of candidates for the U. S. Naval Academy. These Instructions direct individual medical officers in the various ships, stations, and hospitals to give preliminary physical examinations to candidates for the U.S. Naval Academy. Many candidates as a result of these preliminary examinations have to spend valuable time and money in preparation for their professional examinations, only to be found not physically qualified for entrance to the Naval Academy by the Permanent Board of Medical Examiners at the Naval Academy. A statistical survey of disqualified candidates reveals that 10% of those found physically qualified on preliminary examination were rejected by the Permanent Board of Medical Examiners, while 23.6% of those not preliminarily examined were rejected at Annapolis.

2. Since the Permanent Board of Medical Examiners at the Naval Academy is composed of a number of specialists, it has been recommended and approved that Boards of Medical Examiners composed of specialists be made available at the various Naval Hospitals and Hospital Ships for the Preliminary examination of candidates for the Naval Academy.

3. All Medical Officers in Command, U. S. Naval Hospitals, and Senior Medical Officers of Hospital Ships shall appoint Boards of Medical Examiners to examine and report upon the physical qualifications of candidates for the U. S. Naval Academy.

4. This Board shall consist of a general surgeon, an orthopedic surgeon, an internist, an ophthalmologist and otolaryngologist, a neuropsychiatrist, a roentgenologist, a urologist and dermatologist, a clinical laboratory officer and a dental officer.

5. In order that the preliminary examinations conducted by these hospital Boards of Medical Examiners may correspond in thoroughness to the examinations given by the Permanent Board of Medical Examiners in determining the physical qualifications of candidates reporting for entrance to the Naval Academy, the procedure in the following paragraph is recommended.

6. A candidate, either civilian or military, reporting for a preliminary examination shall first be required to complete the questionnaire on his past medical history and present physical condition, (enclosure (1)). He shall then be required to remove all clothing and to don a bathrobe and slippers and report with NAVMED-Y to the various members of the Board for his physical examination. The medical examiner completing that part of the NAVMED-Y assigned to him, shall initial it and direct the candidate to the next examiner. The neuropsychiatrist as part of his examination shall test the candidate for speech defects by requiring him to read enclosure (2). When the examination has been completed, the candidate shall then report to the senior member of the Board for a review of the rough NAVMED-Y for decision as to whether he meets the physical standards for entrance to the Naval Academy.

(Not Restricted)

7. The report of physical examination shall be made on NAVMED-Y, in quadruplicate. The formal report of Board of Medical Examiners as illustrated in Chapter 12, of Naval Courts and Boards, is neither required nor desired. Under "findings and recommendations", the following statement is required to be inserted and signed:

> "We certify that the candidate is (is not) physically qualified for admission to the U. S. Naval Academy at this time and have so informed the candidate. If found physically qualified, he has been advised that this is a preliminary examination and the final decision as to his physical qualifications for entry into the U. S. Naval Academy rests with the permanent Medical Examining Board, at the U. S. Naval Academy, when he appears for admission there".

The signature of the Senior Member of the Board in addition to the recorder's signature, on the NAVMED-Y, will be sufficient.

8. There must in every case be appended to the report NAVMED-Y, a certificate, sworn to by the candidate, as follows:

> "I certify that I have informed the medical examiner (s) of all bodily or mental ailments, which I have suffered, and that, to the best of my knowledge and belief, I am at present free from any bodily or mental ailments (except----------).
>
> Name_____
> Rate_____
>
> Sworn to and subscribed before me, this___date of _____19_____
>
> Name_____
> Rank_____

9. The report of this preliminary physical examination shall be distributed as follows: (1) Original to the Bureau of Medicine and Surgery, (2) Copy to authority requesting examination, (3) Copy to the Bureau of Naval Personnel, and (4) Copy to Superintendent, U.S. Naval Academy.

10. There have always been excessive numbers of candidates reporting to the U. S. Naval Academy for entrance physical examinations in June, July, August and September, who had been clearly disqualified (and so informed) by the medical officers who had conducted their preliminary examination. When asked why they reported, they stated in most instances they "hoped to get by the Board at the Academy". Such tenacity of candidates in "holding on to their appointments" has resulted in:

(a) Disappointment for themselves, family, friends and Congressional sponsor.

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(b) Unnecessary hardship, tension and suspense for the alternate to appointees, who can not matriculate in Universities until they know "how the principal appointee made out".

(c) Unnecessary delay in processing the plebe class at the Academy and interference with the pre-academic routine, so vital in beginning the academic year properly.

11. Such action of principal appointees during the year 1945 delayed the final assembly of the Plebe Class and complete processing of that Class until the 29th of September, although examinations had been started on the 8th of June. Immunization schedules became very complicated and irregular, clerical procedures difficult and telephone calls from sponsors and parents more frequent.

12. It is believed that a thorough preliminary examination given in the Naval Hospitals and Hospital Ships will obviate many of these problems.

13. If the disqualifying defects are such as may reasonably be expected to respond satisfactorily to correction prior to the time a candidate is to report to the Academy for his final entrance examination, the report of physical examination should contain an entry to that effect, under the heading of "Remarks on abnormalities, not otherwise noted or sufficiently described above."

14. The entry on the NAVMED-Y should make clear to the sponsor and candidate that the correction of a defect may or may not result in the candidate's ability to meet the physical standards and would depend entirely upon actual results and the procedure designed to correct the defect. A second preliminary examination should be made as soon as possible, following correction of the defect.

15 It is contemplated that the Congressional sponsor will instruct his first alternate appointee to report to the nearest U. S. Naval Hospital for physical examination, upon receipt of a NAVMED-Y stating that his principal appointee is not physically qualified and will repeat the procedure if the first, second or third alternates, too, are disqualified.

16. All candidates for appointment from the Armed Services shall be examined in the same manner as civilian candidates. Prior to authorization by his Commanding Officer to appear before a preliminary Board of Medical Examiners at a Naval Hospital or Hospital Ship, each applicant for the Naval Academy Preparatory School shall be given a "screening" examination by the medical officer of the ship or station. A report of this examination on NAVMED-Y will accompany each candidate believed to be physically qualified.

17. Members of the Boards of Medical Examiners should become familiar with the physical standards for entrance to the Naval Academy (reference (a) and (b)) in order to eliminate all candidates with a past history of a disqualifying disease, injury or defect which may lead to a disability. The necessity of eliminating the physically and mentally unfit from the Armed forces has been demonstrated over and over again. The fallacy of taking personnel into the

(Not Restricted)

armed service for military duty with defects, in the belief that the defect will not prove disabling, has been so frequently demonstrated that the practice should be discontinued.

18. Physical examinations of candidates for the Naval Academy should not be unnecessarily delayed because of the lack or absence of qualified specialists to serve on the Board of Medical Examiners. Such preliminary examination does not take the place of a later demonstration of physical fitness prior to acceptance at the U. S. Naval Academy or prevent candidates from obtaining a preliminary examination at the U. S. Naval Academy.

19. In summary -

(1) Reference (a) and (b) are modified in that official reports of preliminary examination shall be released only from U. S. Naval Hospitals and Hospital Ships.

(2) Individual medical officers may conduct screening examinations on Naval Academy candidates, but shall refer all candidates to Naval Hospitals or Hospital Ships for the official preliminary report.

20. Page changes to pars. 2115 and 2191.8 of the Manual of the Medical Department are being prepared and will be distributed in the near future.

--BuMed. C. A. Swanson

ENCLOSURE 1

Medical Questionnaire

ANSWER ALL QUESTIONS BY YES OR NO. IF ANSWER TO ANY QUESTION IS YES MAKE DETAILED STATEMENT ON BACK OF THIS SHEET.

Date_____

	Make X Mark Yes	NO
1. Have you ever been previously examined physically by a Navy Medical Officer for entrance into the U. S. Naval Academy?		
2. Did you pass that examination?	___	___
3. Have you ever been under treatment at a hospital?	___	___
4. Have you ever had a sprain or dislocation of a joint?	___	___
5. Have you ever had a broken bone, a fractured skull, or been "knocked out?"	___	___
	___	___

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	Yes	No
6. Have you ever had an injury to your back?	—	—
7. Have you ever had Hay Fever?	—	—
8. Have you ever had Asthma?	—	—
9. Have you ever had a surgical operation?	—	—
10. Have you ever lisped, stuttered or stammered?	—	—
11. Have you ever had an operation for sinus disease, or had repeated attacks of sinus disease?	—	—
12. Have you ever been injured in athletics?	—	—
13. Have you ever worn Glasses; had an eye disease; had crossed eyes or double vision?	—	—
14. Have you ever had a venereal disease?	—	—
15. Have you ever been denied life insurance because of a physical condition?	—	—
16. Have you ever had fits or convulsions, or fainting spells?	—	—
17. Have you ever walked in your sleep?	—	—
18. Do you ever bite your nails?	—	—
19. Have you ever had any difficulty with your feet?	—	—
20. Have you wet the bed at any time since childhood?	—	—
21. Is there any history of insanity or nervous disorder in your family or blood relatives?	—	—
22. Have you ever raised or spat up blood?	—	—
23. Do you, at the present time, have any physical disability, disease, or condition that might prevent you from fully participating in all activities at the Naval Academy?	—	—
24. Do you consider that you are not sound or not well?	—	—

I certify that I have recorded all bodily or mental ailments, which I have suffered, and that to the best of my knowledge and belief, I am at present free from any bodily or mental ailments, (except_____).

I further certify that the foregoing questions and my answers have been read over by me; that I fully understand that questions and that my answers thereto are correctly recorded and are true in all respects.

To be reviewed by Senior Member, Board of Preliminary Physical Examination.

_____

Signature of Candidate in full

ENCLOSURE 2

Reading Aloud Test

You wished to know all about my grandfather. Well, he is nearly 93 years old; he dresses himself in an ancient black frock-coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long, flowing beard clings to his chin, giving those who observe him a pronounced feeling of the utmost respect. When he

(Not Restricted)

speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in the winter when the ooze or snow or ice is present, he slowly takes a short walk in the open air each day. We have often urged him to walk more and smoke less, but he always answers, "Banana Oil." Grandfather likes to be modern in his language!

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Circular Letter 47-76 19 June 1947 (Not Restricted)

To: MedOfsCom, All Naval Medical Research Activities.

Subj: Quarterly Report of Medical Research Assistants, Establishment of.

1. In view of the adverse effect upon the Naval Medical Research program of transferring certain highly trained, specialized enlisted personnel of the Hospital Corps engaged in specific research assignments to sea duty directly in compliance with existing sea-shore duty survey requirements, the Chief of Naval Personnel has indicated the Bureau will consider a temporary exemption for such personnel when the circumstances warrant and suitable justification is submitted by the activity concerned supported by an approval recommendation from BuMed.

2. No change in current enlisted personnel accounting or distribution procedures or sea or shore duty surveys is indicated. Activities will continue, as heretofore, to make recommendations in individual cases of Hospital Corpsmen designated as MRA who are reported on quarterly sea-shore duty availability reports. Recommendations for exemption from transfer to sea duty must contain adequate justification in each individual case, giving the probable period of time exemption will be necessary

3. In order that this program may be conducted in conformance with current naval personnel policy insofar as practicable, and in accord with efficient progress in the Naval Medical Research Program, it is directed that addressees submit to this Bure (as of 15 February, May, August and November) a Quarterly Report of Medical Research Assistants. The letter report shall be as brief as possible in each case and shall contain the following information:

(a) Name, rate, serial number, and Navy job classification of each MRA on board who has completed two or more years on current tour of shore duty.

(b) Whether or not services of individual are indispensable to accomplishment of current research project and

(Not Restricted)

transfer to sea duty is impracticable. Give estimated number months deferment will be required.

(c) Brief analysis of current duties.

--BuMed. C. A. Swanson

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Circular Letter 47-77 19 June 1947 (Not Restricted)

To: MedOfCom, All Naval Hospitals

Subj: Cross-Index System for Hospital Case Records.

Ref: (a) Circular Letter No. 47-61 dated 12 May 1947

This letter from the Chief of BuMed states that because the pamphlet containing the detailed instructions for the setting up and operation of the new cross-index system has not yet cleared the Government Printing office, the installation of the system probably will be delayed beyond 1 July 1947, the date originally set.

--BuMed. H. L. Pugh

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Circular Letter 47-78 23 June 1947 (Not Restricted)

To: All Ships and Stations.

Subj: Hospitalization of active duty naval personnel in U.S. Public Health Service Hospitals.

Refs: (a) Paragraph 313, Manual Medical Department, 1945.
(b) Paragraph 319, Manual Medical Department, 1945.
(c) ALNAV 366, 9 July 1946.

1. Reference (c) reported to the naval service that the reciprocal agreement between the Public Health Service and the Navy Department was terminated as of 30 June 1946, and that the transfer of medical and dental supplies and hospitalization of the U. S. Coast Guard personnel thereafter would be on a

reimbursable basis. However, the appropriation of the Public Health Service for the fiscal year 1947 had already been passed by Congress, and included provision for medical and hospital care of active duty naval personnel, for which reason no charge has been or will be made by that Service for care of Navy personnel during the fiscal year 1947.

2. Effective 1 July 1947, hospitalization of naval personnel in Marine Hospitals will again be on a reimbursable basis at the rate prescribed by the Federal Board of Hospitalization, and each case should be promptly reported to BuMed on NavMed-U, in duplicate, as the basis for payment of the charges that will be submitted by the Public Heath Service.

3. The cancellation of the reciprocal agreement does not alter the required utilization of the Public Health Service or other federal medical facilities in the absence of facilities of the Medical Department of the Navy. Whenever practicable, Navy personnel applying for treatment in such other federal facilities should present a written request from their respective commanding officers.

4. Effective 1 July 1947, the instructions in reference (b), or elsewhere, that conflict with this letter are hereby cancelled. Appropriate revision of the Manual of the Medical Department will be made as soon as practicable.

--BuMed. C. A. Swanson

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ALNAV 22 18 June 1947 (Not Restricted)

Subj: Modification of Instructions concerning BuMed Material Requisition:

Paragraph 11 (a) BuMed circular letter 47-33 Navy Department Bulletin 31 March 1947 is modified as follows:

Insert a period after the word "available" in first sentence; delete the remainder of the sentence and substitute for it, "material back-ordered by medical supply depots for shore stations will be furnished as material becomes available without regard for fiscal year in which requisitioned".

--SecNav. James Forrestal

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